

THERE IS CLAIMED:

1 1. An electrical circuit inspection apparatus  
2 comprising:

3 a first inspection functionality operative to obtain  
4 first attribute information with respect to a  
5 conductor location on an electrical circuit;

6 a second inspection functionality operative to obtain  
7 second attribute information with respect to said  
8 conductor location on said electrical circuit; and

9 a conductor attribute analyzer receiving said first  
10 attribute information and said second attribute  
11 information, and evaluating a combination of said  
12 first attribute information and said second attribute  
13 information to determine an inspection attribute of a  
14 conductor at said conductor location.

1 2. The electrical circuit inspection apparatus  
2 according to claim 1, wherein said first inspection  
3 functionality senses reflectivity at said conductor  
4 location as a basis for said first attribute information.

1 3. The electrical circuit inspection apparatus  
2 according to claim 2, wherein said first inspection

3 functionality determines a top width dimension of said  
4 conductor based on said sensed reflectivity.

1 4. The electrical circuit inspection apparatus  
2 according to claim 1, wherein said second inspection  
3 functionality senses luminescence at said conductor  
4 location as a basis for said second attribute  
5 information.

1 5. The electrical circuit inspection apparatus  
2 according to claim 4, wherein said second inspection  
3 functionality determines a bottom width dimension of said  
4 conductor based on said sensed luminescence.

1 6. The electrical circuit inspection apparatus  
2 according to claim 3, wherein said second inspection  
3 functionality senses luminescence at said conductor  
4 location as a basis for said second attribute  
5 information.

1 7. The electrical circuit inspection apparatus  
2 according to claim 6, wherein said second inspection  
3 functionality determines a bottom width dimension of said  
4 conductor based on said sensed luminescence.

1 8. The electrical circuit inspection apparatus  
2 according to claim 7, wherein said inspection attribute  
3 is a cross section configuration of said conductor.

1 9. The electrical circuit inspection apparatus  
2 according claim 7, wherein said attribute analyzer  
3 comprises an impedance analyzer receiving said top width  
4 dimension and said bottom width dimension for a plurality  
5 of conductor locations, and determining therefrom an  
6 impedance attribute of said conductor.

1 10. An electrical circuit inspection method comprising:  
2 obtaining first attribute information of a plurality of  
3 conductor locations on an electrical circuit;  
4 obtaining second attribute information of said plurality  
5 of locations; and  
6 determining an inspection attribute of a conductor at  
7 one or more of said conductor locations based on a  
8 combination of said first attribute information and  
9 said second attribute information.

1 11. The electrical circuit inspection method according  
2 to claim 10, wherein said providing of said first

3 attribute information comprises sensing a reflectivity  
4 value.

1 12. The electrical circuit inspection method according  
2 to claim 11, wherein said providing of said first  
3 attribute information further comprises:

4 receiving said reflectivity value, for said one or more  
5 conductor locations; and  
6 determining therefrom a top width dimension of said  
7 conductor.

1 13. The electrical circuit inspection method according  
2 to claim 10, wherein said providing of said second  
3 attribute information comprises sensing a luminescence  
4 value.

1 14. The electrical circuit inspection method according  
2 to claim 13, wherein said providing of said second  
3 attribute information further comprises:

4 receiving said luminescence value for said one or more  
5 conductor locations; and  
6 determining therefrom a bottom width dimension of said  
7 conductor.

1 15. The electrical circuit inspection method according  
2 to claim 10, and wherein said providing of said second  
3 attribute information comprises sensing a height value.

1 16. The electrical circuit inspection method according  
2 to claim 15, wherein said providing of said second  
3 attribute information further comprises sensing set  
4 height value based on a topographical profile.

1 17. The electrical circuit inspection method to claim  
2 12, wherein said providing of said second attribute  
3 information comprises sensing a luminescence value.

1 18. The electrical circuit inspection method according  
2 to claim 15, wherein said providing of said second  
3 attribute information further comprises:

4 receiving said luminescence value for said one or more  
5 conductor locations; and  
6 determining therefrom a bottom width dimension of said  
7 conductor.

1 19. The electrical circuit inspection method according  
2 to claim 16, further comprising determining, as said  
3 inspection attribute, a cross section configuration of

4 said conductor based on said top width dimension and said  
5 bottom width dimension.

1 20. The electrical circuit inspection method according  
2 claim 16, further comprising determining, as said  
3 inspection attribute, an impedance attribute of said  
4 conductor, based on said top width dimension and said  
5 bottom width dimension for said one or more conductor  
6 locations.

1 21. The electrical circuit inspection method according  
2 claim 10, further comprising employing said inspection  
3 attribute to determine a defect in a process used to  
4 fabricate said electrical circuit.

1 22. The electrical circuit inspection method according  
2 to claim 10, further comprising making a production  
3 determination based on said inspection attribute.

1 23. The electrical circuit inspection method according  
2 to claim 22, wherein said production determination is one  
3 of:

4 approving said electrical circuit;  
5 discarding said electrical circuit; and  
6 repairing said electrical circuit.

1 24. Electrical circuit inspection apparatus comprising:  
2 at least one inspection functionality operative to  
3 provide information regarding a cross-sectional  
4 configuration of a conductor; and  
5 an impedance calculator operative to employ said  
6 information regarding said cross-sectional  
7 configuration of said conductor in order to provide  
8 output data indicative of the impedance of said  
9 conductor.

1 25. Electrical circuit inspection apparatus according to  
2 claim 24 and wherein said at least one inspection  
3 functionality comprises:  
4 a reflection sensor operative to sense reflectivity of  
5 said conductor; and  
6 a luminescence sensor operative to sense luminescence of  
7 said conductor.

1 26. Electrical circuit inspection apparatus comprising:  
2 a top dimension calculator operative to calculate a top  
3 dimension of a conductor portion in an electrical  
4 circuit;

5 a bottom dimension calculator operative to calculate a  
6 bottom dimension of a conductor in an electrical  
7 circuit; and  
8 a cross section configuration analyzer operative to  
9 receive top dimension calculations for a multiplicity  
10 of conductor portions, and bottom dimension  
11 calculations for said multiplicity of conductor  
12 portions and output a report of said top dimensions  
13 and said bottom dimensions.

1 27. An electrical circuit inspection method comprising:  
2 inspecting at least one conductor to provide cross  
3 sectional information of a conductor; and  
4 employing said cross-sectional information to provide  
5 output data indicative of the impedance of said  
6 conductor.

1 28. An electrical circuit inspection method according to  
2 claim 27 and wherein said inspecting comprises:  
3 sensing reflectivity of said conductor; and  
4 sensing luminescence of a substrate in a vicinity of  
5 said conductor.

1 29. Electrical circuit inspection method comprising:



2 calculating, at a plurality of sampling points, a  
3 surface dimension of a conductor portion in an  
4 electrical circuit;  
5 calculating, at said plurality of sampling points, a  
6 footprint dimension of said conductor portion in said  
7 electrical circuit;  
8 analyzing said surface dimensions and said footprint  
9 dimensions for said plurality of sampling points; and  
10 outputting a report based on said surface dimensions and  
11 said footprint dimensions.

1 30. A method for manufacturing an electrical circuit,  
2 comprising:  
3 using equipment to provide a printed circuit board  
4 having at least one conductor on a substrate;  
5 inspecting said printed circuit board to obtain a  
6 surface dimension value corresponding to a surface  
7 dimension of said at least one conductor;  
8 inspecting said printed circuit board to obtain a  
9 footprint dimension value corresponding to a  
10 footprint dimension of said at least one conductor;  
11 and

12 ' adjusting said equipment based on one or more of said  
13 surface dimension value and said footprint dimension  
14 value.

1 31. A method for manufacturing an electrical circuit,  
2 comprising:

3 forming at least one conductor on a substrate to provide  
4 a printed circuit board;

5 inspecting said printed circuit board to obtain cross-  
6 section information for said at least one conductor;

7 making a production determination based on said cross-  
8 section information.

1 32. The method for manufacturing an electrical circuit  
2 as set forth in claim 31, wherein said production  
3 determination is one of:

4 approving said printed circuit board;

5 discarding said printed circuit board; and

6 repairing said circuit board.

1 33. The method for manufacturing an electrical circuit  
2 as set forth in claim 31, wherein said cross-section  
3 information includes a surface dimension and a footprint  
4 dimension of said at least one conductor.